

SCOPE OF DEMAND

1. A vacuum evaporation deposition method of the winding type in which under the atmosphere of reduced pressure, an insulating material film is continuously fed out, 5 cooled in close contact with a cooling roller and metal is evaporated onto said insulating material film to deposit a metal film thereon, characterized in that before the deposition of the metal film, said insulating material film is closely contacted with said cooling roller by charging said insulating material film, and after the deposition of the metal film, said insulating material film is closely contacted with said cooling roller by applying a voltage 10 between said metal film and said cooling roller.

2. A vacuum evaporation deposition method of the winding type according to claim 1, in which in the step of charging said insulating material film, charged particles are irradiated onto the running insulating material film, being scanned in the width direction of said insulating material film.

15 3. A vacuum evaporation deposition method of the winding type according to claim 2, in which said charged particles are irradiated, at the time when said insulating material film has contacted with said cooling roller.

20 4. A vacuum evaporation deposition method of the winding type according to claim 1, in which in the step of applying the voltage between the metal film and said cooling roller, a DC voltage is applied between an auxiliary roller for guiding said insulating material film with said metal film deposited, and said cooling roller.

25 5. A vacuum evaporation deposition method of the winding type according to claim 4, in which the step of applying the voltage between the metal film and said cooling roller includes a step of measuring a surface potential of said metal film and another step of so controlling the applying voltage as to put said surface potential within a predetermined range.

30 6. A vacuum evaporation deposition method of the winding type according to claim 1, in which a mask pattern for defining a deposition region of the metal film is formed on the surface to be deposited, of the material film before the step of charging the insulating material film.

7. A vacuum evaporation deposition method of the winding type according to claim 1, in which electricity of said insulating material film are removed after the deposition of the metal film.

8. A vacuum evaporation deposition apparatus of the winding type in which there
5 are provided in a vacuum chamber, an unwinding roller for continuously feeding an insulating material film, a winding roller for taking up said insulating material film, a cooling roller for cooling said insulating material film in contact, arranged between said unwinding roller, and said winding roller, and an evaporation source for depositing a metal film on said insulating material film, arranged in face to said cooling roller,
10 characterized in that said apparatus comprises, charged-particles irradiating means for irradiating charged particles onto said insulating material film, arranged between said unwinding roller and said evaporation source, an auxiliary roller for guiding said insulating material film in contact with the deposited metal film, arranged between said winding roller and said cooling roller, and voltage-applying means for applying a DC
15 voltage between said auxiliary roller and said cooling roller.

9. A vacuum evaporation deposition apparatus of the winding type according to claim 8, in which there is provided detecting means for detecting a surface potential of said metal film deposited on said insulating material film, arranged between said cooling roller and said auxiliary roller and controlling means for controlling the applying voltage
20 of said voltage supplying means on the basis of the detected output of said detecting means.

10. A vacuum evaporation deposition apparatus of the winding type according to claim 8, in which said charged-particles irradiating means is arranged in face to the peripheral surface on said cooling roller.

25 11. A vacuum evaporation deposition apparatus of the winding type according to claim 8, in which mask-pattern forming means is arranged between said unwinding roller and said charged-particles irradiating means, for defining a mask pattern of the deposition regions of said metal film on said insulating material film.

30 12. A vacuum evaporation deposition apparatus of the winding type according to claim 8, in which electricity removal means is arranged between said auxiliary roller and

said winding roller for removing electricity of said insulating material film.